1/3

Submitted to:
Waste Management Council
NH Dept. Environmental Services Legal Unit
29 Hazen Drive, P.O. Box 95
Concord, NH 03302-0095

Submitted by:
D. Rae Barnhisel, Ph.D.
161 Fish Road
Temple, NH 03084

Regarding:
Docket No. 05-20 WMC – D.R. Barnhisel Appeal

RECEIVED
DEC 21 2005

NOTICE OF APPEAL

Under RSA 21-O:14 and 21-O:9-V and in accordance with RSA 541-A and ~~N.H. Admin.~~ Rules, Env-WMC 200, this Notice is to Appeal the Groundwater Management Permit No. 199103027-T-001 issued by the NH Department of Environmental Services (NH DES), Waste Management Division, to the Town of Temple on November 7, 2005 to monitor groundwater quality at the Temple Landfill, Map 5- Lot 38.

Env-WMC 204.02(b)(3): Relief Sought

Relief sought in this appeal of Groundwater Management Permit (GMP) No. 199103027-T-001 (Attachment A) includes the following:

1) Delete the GMP's Special Management Permit Condition No. 7 to monitor existing and proposed monitoring wells for sampling groundwater (Attachment A, p. 2);
2) Delete the GMP's Special Conditions For This Permit No. 12 to install a monitoring well (Attachment A, p. 4);
3) Institute an order for the Permit Holder to decommission all existing monitoring wells in accordance with Env-Wm 1403.27.

Env-WMC 204.02(b)(4): Facts of the Case

1) The existing monitoring wells at the Temple Landfill were not installed according to U.S. federal standards per a U.S. Environmental Protection Agency letter dated November 1, 2001 (Attachment B).
2) The existing monitoring wells at the Temple Landfill in 2001 were not installed according to N.H. state standards per a NH DES letter dated November 14, 2001 (Attachment C).
3) Two of the four monitoring wells were stated to be "suspect" and slated to be decommissioned in accordance with Env-Wm 1403.27 per a NH DES letter dated June 24, 2004 (Attachment D).
4) The landfill and the monitoring wells are located in a wetland. Depths of the existing monitoring wells range from 10 to 16 feet (Attachment E, Soil Boring Logs and Location of Temple Landfill's Monitoring Wells B1-B4). The wells are too shallow to supply "groundwater" data.

5) Residential wells in the area of Temple's Landfill, Map 5-38, are drilled artesian wells from 200 to 500 feet deep. The landfill's shallow monitoring wells cannot provide data useful to nearby residents.

6) The GMP does not require that the new monitoring well be installed at a sufficient depth to measure "groundwater."

4) The GMP does not require that "suspect" wells will be decommissioned in accordance with Env-Wm 1403.27 to protect public health and safety.

7) Insufficient rationale exists as to why the Town of Temple should be issued a Groundwater Management Permit when its landfill's monitoring wells are considered by federal and state agencies to be a) sub-standard and thus unable to provide useful or meaningful data, and b) too shallow to measure groundwater.

8) Data provided by Temple Landfill's sub-standard and shallow monitoring wells are not only useless but also deceptive in that they imply groundwater from a hazardous waste facility is being monitored when, in fact, it is not. This deception threatens public health and safety and wastes taxpayer funds.

Env-WMC 204.02(b)(5): Appellant Standing

Proximity

My drinking water well is located in Map 5-Lot 35, approximately 500 feet from the Temple Landfill, Map 5-Lot 38. The depth of my well is 375 feet, an average depth for drilled groundwater residential wells in the area. I am personally affected by the assertion by NH DES that the sub-standard and shallow monitoring wells at the Temple Landfill can provide meaningful water quality data.

Official Duty

As an elected official to the Planning Board, my obligation is to health and safety of residents. For the Town of Temple to engage in a landfill monitoring program in which sub-standard and shallow wells provide "groundwater data" gives residents a false sense of security that the discharge from a hazardous waste facility is being evaluated when, in fact, it is not.

As an elected official of the Budget Advisory Committee, my obligation is to the taxpayer to see that town-appropriated funds are used for legitimate purposes. For NH DES to require taxpayer funded groundwater monitoring from Temple landfill's sub-standard and shallow wells is fiscally irresponsible. For the Town of Temple to spend public funds to monitor sub-standard and shallow wells and call the results "groundwater data" is deceit.

Professional Obligation

My Ph.D. is in the aquatic sciences. As a professional, I object to deceptive practices that undermine public confidence in the scientific and engineering fields. Monitoring wells installed in a wetland at less than 20 feet deep that do not meet federal or state standards cannot provide meaningful or useful "groundwater" quality data or data of any quality.

Env-WMC 204.02(b)(6): Copy of Decision or Order Appealed

Attachment A is Groundwater Management Permit No. 199103027-T-001, issued by NH DES to the Town of Temple on November 7, 2005, and is the subject of this appeal.

Env-WMC 204.02(d): Copy of Notice to Director and Commissioner

Copies of this Notice of Appeal and Attachments have been sent to the following parties accompanied by a Certificate of Service per Env-WMC 204.09(e).

Anthony P. Giunta, WMD Director
Dept. Environmental Services
29 Hazen Drive, P.O. Box 95
Concord, NH 03302-0095

Michael P. Nolin, Commissioner
Dept. Environmental Services
29 Hazen Drive, P.O. Box 95
Concord, NH 03302-0095

Env-WMC 204.02(e): Copy of Notice to Permit Holder and Other Parties

A copy of this Notice of Appeal and Attachments has been sent to the following parties accompanied by a Certificate of Service per Env-WMC 204.09(e).

Select Board
Town of Temple
P.O. Box 191
Temple, NH 03084

Richard Pendleton
EastView Environmental
28 Kaufmann Drive
Peterborough, NH 03458

Summary of Attachments

A. Groundwater Management Permit No. 199103027-T-001 issued to the Town of Temple, dated November 7, 2005.

B. U.S. Environmental Protection Agency letter dated November 1, 2001.

C. NH DES letter dated November 14, 2001.

D. NH DES letter dated June 24, 2004.

E. Location, Depth, and Soil Boring Logs of Temple Landfill's Monitoring Wells B1-B4 prepared for Stratex, LLC by Jacques Whitford Company, Inc., dated May 14, 2001.

Certificate of Service

On this 21st day of December, 2005, I hereby certify that I have:

1) Delivered, by hand, an original and twenty (20) copies of this Notice of Appeal and Attachments A-E to the Appeals Clerk, Michael P. Sclafani, NH Waste Management Council.

2) Delivered, by hand, one (1) copy of this Notice of Appeal and Attachments A-E to each of the following:

   Anthony P. Giunta, WMD Director

   Michael P. Nolin, DES Commissioner

3) Mailed, by first class, one (1) copy of this Notice of Appeal and Attachments A-E to each of the following:

   Town of Temple Select Board

   Richard Pendleton, EastView Environmental

Dr. D. R. Barnhisel

ATTACHMENT A

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

The

NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES

hereby issues

GROUNDWATER MANAGEMENT PERMIT NO. GWP-199103027-T-001

to the permittee

TOWN OF TEMPLE

to monitor groundwater quality at the

TEMPLE DUMP
(Old Brown Road)

in TEMPLE, N.H.

via the groundwater monitoring system comprised of

4 monitoring wells and 2 surface water sampling locations

as depicted on the Site Plan entitled

"Figure 5- Groundwater Results Summary- October 26, 2004"

dated November 2004, prepared by Eastview Environmental

TO: BOARD OF SELECTMEN
TOWN OF TEMPLE
PO BOX 191
TEMPLE, NH 03084

Date of Issuance: November 7, 2005
Date of Expiration: November 6, 2010

Pursuant to authority in N.H. RSA 485-C:6-a, the New Hampshire Department of Environmental Services (Department) hereby grants this permit to monitor groundwater for five years at the above described facility subject to the following conditions:

(continued)

STANDARD MANAGEMENT PERMIT CONDITIONS

1. The permittee shall not violate Ambient Groundwater Quality Standards adopted by the Department (N.H. Admin. Rules Env-Wm 1403) in groundwater outside the boundaries of the Groundwater Management Zone, as shown on the referenced site plan.

2. The permittee shall not cause groundwater degradation which results in a violation of surface water quality standards (N.H. Admin. Rules Env-Ws 1700) in any surface water body.

3. The permittee shall allow any authorized staff of the Department, or its agent, to enter the property covered by this permit for the purpose of collecting information, examining records, collecting samples, or undertaking other action associated with this permit.

4. The permittee shall apply for the renewal of this permit 90 days prior to its expiration date.

5. This permit is transferable only upon written request to, and approval of, the Department. Compliance with the existing Permit shall be established prior to ownership transfer. Transfer requests shall include the name and address of the person to whom the permit transfer is requested, signature of the current and future permittee, and a summary of all monitoring results to date.

6. The Department reserves the right, under N.H. Admin. Rules Env-Wm 1403, to require additional hydrogeologic studies and/or remedial measures if the Department receives information indicating the need for such work.

7. The permittee shall maintain a water quality monitoring program and submit monitoring results to the Department's Groundwater Management Permits Coordinator no later than 45 days after sampling. Samples shall be taken from on-site monitoring wells and surface water sampling points as shown and labeled on the referenced site plan and other sampling points listed on the following table in accordance with the schedule outlined herein:

Monitoring Locations	**Sampling Frequency**	**Parameters**
MW-1A, MW-2, MW-3A, MW-6 (to be installed), SW-1, SW-2	April & November each year	Specific conductance @ 25° C, pH, iron, manganese, chloride, nitrate, TKN, sulfate, and static water elevation
Same as above	April 2006	NHDES Petroleum & Hazardous Waste Remediation Programs Full List of Analytes for Volatile Organics and Drinking Water Metals

(continued)

Samples shall be obtained using sampling procedures and protocol described in "Practical Guide for Ground-Water Sampling," USEPA current edition, and "RCRA Ground-Water Monitoring: Draft Technical Guidance," USEPA current edition. Samples shall be analyzed by a laboratory certified by the U.S. Environmental Protection Agency or the New Hampshire Department of Environmental Services. All overburden groundwater samples collected for metal analyses (iron, manganese, and Drinking Water Metals) shall be analyzed for dissolved metals; and thus must be field filtered (with a 0.45-micron filter) and acidified after filtration in the field. Surface water samples and samples collected from bedrock or water supply wells shall be analyzed for total metals, and shall not be filtered. As referred to herein, the term "Drinking Water Metals" refers to arsenic, barium, cadmium, chromium, lead, mercury, selenium and silver.

Summaries of water quality shall be submitted annually to the Department's Waste Management Division, attention Groundwater Management Permits Coordinator, in the month of **June**, using a format acceptable to the Department. The Annual Report shall include a tabular summary of all monitoring results to date, an assessment of trends in the data, a groundwater contour map utilizing most recent groundwater elevation data, an evaluation of the performance of the remedial action plan, and any recommendations for modifications to the remedial action plan.

The Annual Report shall be prepared and stamped by a professional engineer or professional geologist licensed in the State of New Hampshire.

8. Issuance of this permit is based on the Groundwater Management Permit Application dated November 23, 2004 and the historical documents found in the Department file DES #199103027. The Department may require additional hydrogeologic studies and/or remedial measures if invalid or inaccurate data are submitted.

9. Within 60 days of the date of Department approval of this Groundwater Management Permit, the permit holder shall record notice of the permit in the registry of deeds in the chain of title for the **lot** comprising the Groundwater Management Zone. **This recordation requires that the registry be provided with book and page numbers for the deed of each lot encumbered by this permit. Portions of State/Town/City roadways and associated right-of-way properties within the Groundwater Management Zone do not require recordation.** A copy of the recorded notice shall be submitted to the Department within 30 days of recordation.

10. Within 30 days of discovery of a violation of an ambient groundwater quality standard at or outside the Groundwater Management Zone boundary, the permittee shall notify the Department in writing. Within 60 days of discovery, the permittee shall submit a work scope for development of a revised remedial action plan, including a schedule of milestones, to the Department for approval. The Department shall approve the revised remedial action plan if compliance with Env-Wm 1403.08 has been demonstrated.

SPECIAL CONDITIONS FOR THIS PERMIT

11. Recorded property within the Groundwater Management Zone shall include the lot as listed and described in the following table:

Tax Map/ Lot #	Property Address	Owner Name and Address	Deed Reference (Book/Page)
Map 5/ Lot 38	Temple Dump Old Brown Road Temple, NH 03084	Town of Temple PO Box 191 Temple, NH 03084	Book 1375/ Page 403

12. A single, overburden monitoring well, designated MW-6 is required to be installed at the down-gradient edge of the landfill approximately 150 feet southeast of B-2 and 130 feet northeast of B-3A, within 90 days of permit issuance. The exact location of MW-6 should be determined based upon site access and Department concurrence.

    The installation of the well shall be in general accordance with the specifications outlined in the NHDES Requirements for Hydrogeologic Investigations of Unlined Landfills (July 1998 revision). The overburden well is expected to screen at least 10 feet of saturated thickness with 15 feet of screen set to span the water/soil interface.

13. Two surface water-sampling stations, designated herein as SW-1 and SW-2, shall be established as illustrated on Figure 5 in the November 2004 Supplemental Site Investigation Report. Surface water sampling station SW-1 shall be established just inside the property line on the unnamed brook which flows northeasterly through the site property. Surface water station, SW-2 shall be established at a location north of the landfill as the unnamed brook flows under Fish Road. The exact location of SW-1 and SW-2 should be determined based upon site access and Department concurrence. All surface water sampling stations shall be permanently established in the field by setting a "black iron" pipe, or equivalent device, in the streambed. The surface water stations shall be surveyed for elevation and horizontal control (using a common site datum) and added to the referenced site plan. An updated site plan showing the location of the surface water stations, and a table of reference elevations, shall be included with the Annual Report required under Condition No. 7 of this permit.

14. Sampling and testing of the new well and surface water sampling locations shall be initiated at a minimum 2 weeks before the regularly scheduled April 2006 permit sampling and followed a minimum of two weeks later by the regularly scheduled April 2006 permit sampling. Prior to sampling, the well shall be fully developed until the groundwater withdrawn is essentially free of suspended sediment and relatively non-turbid. Analytical testing at the new well and surface water locations shall consist of Specific Conductance @ 25^{0}C, pH, Nitrate, Sulfate TKN, Iron, Manganese, Chloride & Static Water Elevation, NHDES Petroleum & Hazardous Waste Remediation Full List of Analytes for Volatile Organics and Drinking Water Metals, in accordance with the sampling protocol defined in Permit Condition #7, above.

(continued)

15. A revised site and groundwater contour plan, well logs and well construction details are to be submitted to the Department with the 2006 Annual Report, due no later than June 30, 2006. The revised site plan shall provide the surveyed location of the newly installed well and surface water sampling locations. The new groundwater contour plan shall be constructed with the most recent (April 2006) data and include all reference groundwater elevations at applicable monitoring locations.

Carl W. Baxter, P.E.
Administrator, Hazardous Waste Remediation Bureau
Waste Management Division

Under RSA 21-0:14 and 21-0:9-V, any person aggrieved by any terms or conditions of this permit may appeal to the Waste Management Council in accordance with RSA 541-A and N.H. Admin. Rules, Env-WMC 200. Such appeal must be made to the Council within 30 days and must be addressed to the Chairman of the Waste Management Council, c/o Appeals Clerk, Department of Environmental Services Legal Unit, 29 Hazen Drive, P.O. Box 95, Concord, NH 03302-0095.

The State of New Hampshire
Department of Environmental Services

Michael P. Nolin
Commissioner

November 7, 2005

Sherry Fiske, Chairman
Board of Selectmen
Town of Temple
PO Box 191
Temple, NH 03084

SUBJECT: TEMPLE – Former Temple Dump - Old Brown Road, Groundwater Management Permit (DES #199103027)

Dear Ms. Fiske,

Please find enclosed Groundwater Management Permit Number GWP-199103027-T-001, approved by the Department of Environmental Services (Department). This permit is issued for a period of 5 years to monitor groundwater quality at the subject site.

All annual monitoring summaries and all required sampling results must be submitted to the Groundwater Management Permits Coordinator at the address below. All correspondence shall contain a cover letter that clearly shows the Department identification number for the site (DES #199103027). **Please note that upon issuance of this permit, it is only necessary to submit monitoring results to the "Groundwater Management Permits Coordinator" and** not to my attention.

Also, please note that Condition # 9 requires the permittee to record "Notice" of the permit (not the permit), within 60 days of issuance, at the registry of deeds in the chain of title for the lot within the Groundwater Management Zone for the landfill. An example Notice is enclosed for your use. A copy of the recorded Notice shall be submitted to the Department within 30 days of recordation.

Additionally, the Department has changed its requirement for volatile organics analyses. The Department no longer references an EPA analytical method to be used, but instead specifies a standardized list of analytes along with reporting requirements and detection limits that must be achieved. A copy of the DES Petroleum & Hazardous Waste Remediation Programs Full List of Analytes is attached for your reference.

You are also reminded that Condition #7 requires a Site Summary Report be submitted during the month of June each year. This Annual Report shall include, at a minimum, a tabular summary of all monitoring results to date, an assessment of trends in the data, an evaluation of the performance of the remedial action plan (landfill closure and long term monitoring program), and any recommendations for modifications to the remedial action plan. It should also be noted that on March 7, 2003 the Department sent a letter to the consulting community regarding the need for specific technical documents submitted to the Department to be prepared and stamped by professional engineers and/or professional geologists as required by RSA 310-A:18 and RSA 310-A:130. This letter may be found at http://www.des.nh.gov/orcb/doclist/PEPGStamps.PDF. The required annual summary report shall be prepared and stamped by a professional engineer or professional geologist.

The Supplemental Site Investigation Report (Report) dated November 18, 2004 and received as part of the Groundwater Management Permit Application package made the recommendation to install a new groundwater monitoring well (B-6) at the down gradient edge of the landfill approximately 150 feet southeast of B-2 and 130 feet northeast of B-3A. Also recommended were the establishment of two surface water sampling locations designated SW-1 and SW-2. Both the proposed monitoring well and surface water sampling locations were illustrated on Figure 5 of the Report. The Department concurs with these recommendations. Special Permit Conditions #12 and 13 detail the installation of both the monitoring well at MW-6 and the surface water sampling locations, respectively.

On November 22, 2004 the Department also received a draft Notice of Activity and Use Restriction (AUR) document for the above subject site. Department comments regarding the draft AUR shall be forthcoming under separate cover.

Should you have any questions regarding this letter or require additional information, please contact me directly by telephone at (603) 271-2999, or email at pbeblowski@des.state.nh.us. Both verbal and written inquiries should refer to the DES number as shown on the subject line above.

Sincerely,

Peter L. Beblowski, C.P.G.
Waste Management Division

Attachments: Groundwater Management Permit
Petroleum & Hazardous Waste Remediation Full List of Analytes
Sample Recordation Notice

cc: Michael Guilfoy, SWMB Administrator
Karlee Kenison, HWRB-GR&P, Supervisor (text only via email)
Richard Pendleton, Eastview Environmental
D. Rae Barnhisel
HWRB File #199103027

PLB/mem

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ATTACHMENT B

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 1
1 CONGRESS STREET, SUITE 1100
BOSTON, MASSACHUSETTS 02114-2023

November 1, 2001

OFFICE OF THE
REGIONAL ADMINISTRATOR

Dr. Rae Barnhisel
161 Fish Road
Temple, NH 03084

Dear Dr. Barnhisel:

Thank you for your October 3, 2001 letter to Regional Administrator Robert W. Varney and your October 15, 2001 letter to Douglas Health of my staff. Your letters describe public health and water quality concerns from a closed solid-waste landfill in Temple, New Hampshire. We also received from you a report entitled: "Summary of Hydrogeologic Investigation at the Temple Landfill in Temple, New Hampshire," prepared by Stratex LLC on May 17, 2001. This report summarizes laboratory analyses of ground water samples obtained from four monitoring wells installed earlier this year. We understand the study was conducted on behalf of the Board of Selectmen as part of local planning efforts for a proposed residential sub-division in the vicinity of the landfill. In addition, you forwarded to us a copy of an August 27, 2001 letter from the New Hampshire Department of Health and Human Services, Office of Community and Public Health, that reviewed the report cited above.

Members of my staff have consulted with representatives from NHDES concerning landfill and hydrogeologic issues associated with the historic Temple Landfill. In addition, on October 12, 2001, we arranged a visit to the landfill with you, with Mr. Timothy Fiske, representing the Temple Board of Selectmen, and with officials from the Waste Management Division of NHDES. We have since referred our comments (enclosed) and your concerns to NHDES. The State of New Hampshire is responsible for the regulation of this type of solid-waste facility.

If you have any questions or comments, please direct them to Mr. Richard Reed of the NHDES Waste Management Division (603-271-2926). If you have any questions for EPA New England, please contact Chuck Franks of my staff at 617-918-1554. Thank you very much for your concern in this matter.

Sincerely,

COPY

Ira W. Leighton
Acting Deputy Regional Administrator

Enclosure

cc: Debra Harding, Town Administrator, Temple, NH
Philip O'Brien, Ph.D., NHDES
Richard Reed, NHDES
Anthony Giunta, NHDES
Temple, NH Board of Selectmen

Help us serve you better. If you need to call us regarding this correspondence in the future, please reference 01-0100715.

Technical Comments Regarding the Stratex LLC Report of May, 2001 to the Temple Board of Selectmen, Temple, New Hampshire:

1. Monitoring Wells B-1, B-2, B-3 and B-4, which were installed to measure the up-gradient and down-gradient quality of ground water, appear to be too shallow to fully characterize aquifer conditions at the site. In most cases, the depth to bedrock is not noted or described, and bedrock water quality (especially hydraulically down-gradient of the site) is not addressed. In addition, the wells intercept only the most shallow, uppermost portion of the overburden aquifer. For example, up-gradient monitoring well B-1 is screened from only 5 to 15 feet below the ground surface (bgs). The depth to the water table on May 2, 2001 was measured at a depth of 8.41 feet bgs, with only 6.59 feet of water in the well. Similarly, monitoring well B-3 (installed to measure down-gradient water quality) held only 6.17 feet of water on the same date.

2. Because ground-water elevations generally reach their lowest levels during the autumn season, it is likely that less water is present in these wells at this time of year, making the task of collecting representative ground water samples much more difficult. During periods of prolonged dryness, some of the monitoring wells run the risk of being dry, making sample collection impossible. Although the ambient ground-water quality standards detected by the wells in the shallow overburden may not be exceeded, the ambient standards at the depth of existing or future drinking water wells are not assessed by these monitoring wells.

3. The wells' shallow construction makes it difficult to fully assess the potential health risks associated with consuming ground water for drinking water from aquifers at the site. For example, the NH Office of Community and Public Health, which reviewed the Stratex study on August 27, 2001, stated: "These samples were collected from wells installed to monitor water quality in the overburden (shallow) aquifer. We cannot determine whether existing drinking water wells have been (or will be) impacted by the groundwater conditions represented by these samples or if new wells developed in the vicinity of the Landfill would be affected."

4. The location and depth of down-gradient monitoring well B-3 may not be optimal. For example, the report notes on page 1 that the "landfill sits on western edge of a large peat deposit (two feet of peat were encountered in the bottom of our boring B-3). The peat deposit appears to overlie a moderately productive sand and gravel aquifer..." Given these geologic conditions, well B-3 (or preferably a deeper well next to it) should have been screened <u>below</u> the peat layer to monitor ground-water quality in the sand and gravel aquifer, through which site leachate (if it exists) would preferentially flow from the waste cell(s) to the northeast. In addition, a fifth monitoring well installed next to the culvert at the intersection of Fish and Vintan Roads would enable future investigators to better assess the potential for leachate migration and ground-water quality closer to potential receptors nearby.

5. The report does not contain a Quality Assurance Project Plan, nor does it describe ground-water sample collection and handling procedures. If low-flow purging procedures were followed at the monitoring wells (especially important in VOC sampling), how were representative field parameters obtained and what criteria were used? The Chain of Custody form also indicates that the temperature of the samples when received by Spectrum Analytical, Inc. was 12 degrees Celsius, which exceeds the maximum recommended shipment temperature of 4 degrees C. In

addition, page three of the report lists lead and cadmium as analytes measured, but these are omitted in the laboratory results.

6. The study does not include information about receptors and potential receptors in the vicinity of the site. Moreover, the report provides no details as to owners' address, well location, depth, drillers logs, water-quality analyses or complaints from property abutters in the area. In addition, the contractor makes no clear recommendations for future sampling of residential supply wells adjacent to the site.

7. The location, composition and configuration of the solid waste cell may be estimated by surficial geophysical survey techniques. Given the site's small size (approximately one acre), this would not be a large undertaking, and would provide valuable information for a more optimized network of monitoring wells. In addition, historical aerial photographs taken during active facility operations could be examined to better understand the location and extent of disposal practices.

8. The report does not contain geologic cross-sections of the landfill and underlying aquifer, nor does it display a map of water-table contours showing ground-water flow directions or up-gradient and down-gradient relationships. In addition, surface-water elevations in adjacent drainage systems (including the large wetland next to the site) were not measured or compared with ground-water elevations in the monitoring wells, so the magnitude of SW/GW interactions (important in understanding pollutant fate and transport) cannot be described.

9. The monitoring wells' elevations were not certified in the report by a registered land surveyor, and their accuracy and precision are unknown.

ATTACHMENT C

State of New Hampshire
DEPARTMENT OF ENVIRONMENTAL SERVICES
6 Hazen Drive, P.O. Box 95, Concord, NH 03302-0095
(603) 271-2900 FAX (603) 271-2456

November 14, 2001

CERTIFIED MAIL # 7099 3400 0018 1299 2545
RETURN RECEIPT REQUESTED

Board of Selectmen
Town of Temple
PO Box 191
Temple, NH 03084

SUBJECT: **Registration Form For Landfills Not Operated After July 10, 1981 (WMD Log No. 200100205) Former Temple Municipal Landfill, Tax Map 5, Lot 038**

Dear Members of the Board:

The Department of Environmental Services, Waste Management Division (Department) has completed review of the Subject registration form, which was submitted and certified by the Town of Temple (Town), with respect to the Town's property located on Old Brown Road in Temple, New Hampshire. Based on its review of available information and a site visit, conducted on October 12, 2001, the Department offers the following:

A. Landfill Registration:

To complete the landfill registration, the Town needs to provide a signed copy of the signature page of the previously submitted document. In a telephone conversation on November 7, 2001 between Debra Harling, Administrative Assistant for the Town of Temple, and Catherine Wright of the Department, the Department was told that the signature page for the registration has been completed and will be filed shortly.

Once the landfill registration is received, the registration process will be complete and the Department will require no further action at this time. If at some future time the Department determines that the Subject landfill is adversely affecting the groundwater, surface water, or other elements of public health or the environment, the owner(s) will be notified of its obligation to mitigate the impact. Such mitigation may include full closure of the Subject landfill. It is important for the Town to know that mitigation of the site is not undertaken at the Department's expense.

B. Solid Waste Information Review:

1. Registration Form:

The Registration Form for Landfills Not Operated After July 10, 1981 (Registration Form), submitted by the Town identifies the location of the landfill on Temple Tax Map 5, Lot 038. According to the Registration Form, the Subject landfill accepted municipal solid waste from the Town of Temple consisting primarily of household residential waste, bulky waste,

construction and demolition debris, white goods, mixed municipal solid waste, tires, and yard wastes. The Registration Form identifies the date of last waste receipt as 1979.

2. Department Files:

Based on a review of Department files the following was noted: Between February 6, 1978 and December 4, 1980, personnel of the New Hampshire Department of Health and Human Services and the Water Supply and Pollution Control Division made several visits to the landfill. According to an Inter-Department Memo, on July 21, 1980, sufficient cover was brought to the landfill to close it out "for good." An Inspection Report dated February 3, 1981 does not note any items of concern, and ends with the comment: "closed out ok." For reference, a copy of the report is attached to this letter.

3. Summary Report:

The Department received from the Town a Summary of Hydrogeologic Investigation Report (Summary Report), dated May 17, 2001 and prepared for the Subject landfill by Stratex, LLC of Portland, Maine, on behalf of the Town. The Summary Report provides additional information regarding the wastes disposed at the Subject landfill, and states that stumps, dead animals, automobiles, asbestos, and oil furnaces were disposed of. At least portions of the solid wastes were reportedly burned on-site. Department records indicate that the dump burned waste regularly. The landfill became active around the 1940's, and became inactive in 1979. In the late 1970's, the landfill was reportedly covered with approximately 6-24 inches of "clay-sand" and was poisoned for rats and rodents after closure.

C. Site Visit:

Department personnel Peter Beblowski, David Rousseau, and Catherine Wright conducted a site visit on October 12, 2001. At the time of the visit, the landfill was noted to be heavily vegetated, with signs of beaver activity. No leachate breakouts or seeps were observed in the immediate vicinity of the landfill, which is bordered on the east by a wetland. One tire, a plastic lid, a large piece of metal, and wood chips were observed on the landfill property. According to the Town's Road Agent, the wood chips were placed by the local utility company following power line maintenance in the Town several years ago. Access to the Subject facility was not restricted, although a chain was observed around a tree at the facility entrance. Signs of recent disposal were not evident. The four monitoring wells described in the Summary Report were observed and found to be locked. Department personnel conducted a subsequent site visit on the same day and met on-site with Timothy Fiske, Temple Road Agent; Douglas Heath, New Hampshire Source Water Coordinator of the Environmental Protection Agency; and Dr. Rae Barnhisel, Temple resident.

D. Evaluation of Potential Environmental Impacts:

Given that the landfill ceased receiving waste in 1979 there is no regulatory requirement imposed by the Department to conduct a site investigation per Administrative Rules Env-Wm 1403 of the New Hampshire Groundwater Management and Groundwater Release Detection Permit Rules (Groundwater Rules). Typically, when there is potential for contamination a "due diligence" Environmental Site Assessment (ESA) is conducted to evaluate whether contaminated

soil and groundwater are present. The Department reviews the results of the ESA and prepares a written response. The Department has reviewed the Summary Report submitted by the Town for consistency for how we review unsolicited ESA reports prepared to evaluate potential environmental impacts. However, the Summary Report does not meet Department standards for an ESA, as will be discussed. Comments with respect to this matter are presented in Section E.

In general, the Department's experience with similar sites (former municipal burn dumps with no history of significant industrial waste disposal) is that there are limited impacts to groundwater. The Department does not presume that old dumps have violated State Ambient Groundwater Quality Standards (AGQS), which are based on drinking water criteria. The second environmental concern that is usually addressed by the ESA is the potential for direct contact with the contaminants in the waste. The report did not sample the waste in the landfill but our experience is that the waste in former municipal burn dumps will exceed the S-1 soil standards contained in the Department Risk Characterization and Management Policy (RCMP). In similar circumstances, an Activity and Use Restriction (AUR) has been established for the former burn area. The AUR is one mechanism used to manage potential exposure and restrict development activities within the footprint of the Subject landfill. An AUR is a written document, which is recorded in the chain of title for the property to provide notice to potential purchasers, lessees, or other users of the property of the existence and location of solid waste. It also defines activities and uses that are prohibited on a site, and remains in effect until such time that the solid waste is removed from the property. The applicability and implementation of an AUR is defined in Section 11.0 of the RCMP, which is attached for reference. If the waste is removed, it must be properly characterized and disposed of in accordance with its regulatory status and an AUR may not be needed. The Department recommends that an AUR be prepared for the Subject landfill.

E. Review - Summary of Hydrogeologic Investigation Report:

The Department has received and reviewed the Summary Report, prepared for the Subject landfill by Stratex, LLC of Portland, Maine, on behalf of the Town. The report includes a summary of the hydrogeologic investigations conducted at the Subject landfill.

1. Clarifications:

   a. The Department suggests unsolicited reports regarding potential environmental impacts at a minimum follow the nationally accepted American Society of Testing and Materials (ASTM) guidelines for ESA's and monitoring well installations. The guidelines which would most apply to this type of investigation are ASTM 1507 titled "Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process," and ASTM 1903 titled "Standard Guide for Environmental Site Assessments: Phase II Environmental Site Assessment Process."

   b. The Summary Report states that it was performed in accordance with the proposal. The Department was not supplied with the proposal, prior to conducting the work.

2. Comments: In general, the Summary Report did not follow the ASTM guidelines and did not provide adequate information to allow assessment of the potential impact to groundwater. The monitoring well siting and installation procedures, sample collection and handling procedures were not discussed to a level of detail necessary to determine if they were performed in accordance with the industry standards for an ESA. In particular, the Department noted the following:

a. According to the Chain of Custody (COC) for the groundwater samples obtained on May 2, 2001, the samples arrived at the lab unpreserved and at a temperature of 12°C. According to standard practice and ASTM D-4448 Table 1 titled "Typical Container and Preservation Requirements for a Ground-Water Monitoring Program," groundwater samples for metals analyses should be preserved with nitric acid to a pH <2 and volatile organic compound (VOC) samples require refrigeration to 4°C, if they are to be considered valid. Additionally, the samples for sulfate have a maximum holding time of 48 hours from sample acquisition. The sulfate samples were obtained on May 2, 2001, and were analyzed on May 5, 2001. The temperature, preservation, and holding times for Total Organic Carbon and Nitrate analyses also did not conform to recommended procedures.

b. The Summary Report does not follow the ASTM guidelines; therefore, the Department is unable to draw conclusions or comment further on site conditions regarding threats to human health and the environment based on the report. Information pertaining to the ASTM guidelines is available on the Internet at http://www.astm.org.

c. The New Hampshire Department of Health and Human Services (NH DHHS) reviewed the Summary Report and prepared a response in a letter dated August 27, 2001. For reference, the letter is attached to this correspondence. Questions regarding the NH DHHS letter should be directed to Mr. David S. Gordon, M.S. of the NH DHHS at 1-800-852-3345 extension 4664 (in New Hampshire only), or (603) 271-4664.

F. Applicability of Federal Law - Solid Waste

The Department has determined that, in accordance with Env-Wm 2503.03 of the Solid Waste Rules, titled "Applicability of Federal Law," the Subject landfill is not subject to the requirements of federal law, as outlined in the Code of Federal Regulations 40 CFR 258, in that it stopped receiving waste prior to October 9, 1991.

G. Department Recommendations

The Department recommends the following actions:

1. Control Site Access

Access to the site should be limited, in order to prevent unauthorized dumping. This might be accomplished with the installation of a gate or barrier such as the placement of large boulders across the major access points.

2. Activity and Use Restriction

The Town should prepare and file an Activity and Use Restriction (AUR) as described above in item D.

3. Investigation

If the Town chooses to conduct an ESA for the landfill, the Department would be willing to review a proposed Scope of Work (SOW) to be certain it conforms with the national standards and guidance documents and is consistent with other approaches used at similar sites. The following documents should be used as guidance prior to development of a proposed SOW. Please find the documents attached or available on the Internet.

- Env-Wm 1403 Groundwater Management and Groundwater Release Detection Permits http://www.des.state.nh.us/orcb/doclist/wm1403.pdf
- Contaminated Sites Risk Characterization and Management Policy (RCMP) http://www.des.state.nh.us/orcb/doclist/rcmp.pdf
- Appendix C of the Guidance Document for the Closure of Solid Waste Landfills in New Hampshire (Appendix C) and Typical Groundwater Monitoring Well Detail, attached.

4. Water Quality Sampling

As part of the ESA the Town should further evaluate the potential water quality impacts for the Subject facility. The Department would recommend that, at a minimum, the water quality sampling and analysis should address the following list of analytical parameters to assess the landfill's impact on water quality:

a. Leachate indicator parameters

Leachate indicator parameters include specific conductance (referenced to 25° C) and pH (both of which are measured in the field); as well as the laboratory parameters chloride, nitrate, sulfate, total Kjeldahl nitrogen (TKN), iron and manganese;

b. Volatile organic compounds (VOCs)

VOCs are a broad class of chemical compounds; analyses for which is performed by a laboratory (using EPA Method 8260B). VOCs are found in wastes containing solvents, paints, petroleum products, lacquers, thinners and related materials, and can cause significant groundwater contamination due to their relatively low drinking water standards and persistence in the environment. Please note that any residential well VOC

analyses must use EPA Method 524.2, which reports results with slightly lower detection limits for most compounds.

c. Safe Drinking Water Act (SDWA) Metals

SDWA Metals include arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver. These are considered "trace metals" and may be present in metal-plating or metal-finishing wastes produced by certain industries and the ash residue from burning of municipal solid waste. Leachate produced by a landfill can also alter the natural geochemistry of groundwater, and "mobilize" metals, which may be naturally present in soils and sediments.

All water quality samples should be collected using EPA-approved sample collection methods (ref.: "Practical Guide for Ground-Water Sampling" and "RCRA GroundWater Monitoring Enforcement Guidance"; EPA current editions). NHDES policy is that all overburden groundwater samples collected for metals analyses (e.g., iron, manganese and SDWA Metals) must be collected by approved low flow methods to minimize suspended solids or field-filtered with a 0.45-micron filter and acidified to a pH $\leq$ 2.0 at the time of collection. Metals samples collected from surface water, supply wells or bedrock monitor wells shall be treated as "total metals" samples and shall not be filtered.

The Town is reminded that if constituents are detected at concentrations above the AGQS, the Town is required to report this condition to the Department, in accordance with Env-Wm 1403.06 of the Groundwater Rules.

H. Summary

To reiterate:

1. Please provide a signed and dated copy of the landfill registration to the Department as soon as possible.
2. Once the landfill registration is received, the registration process will be complete and the Department will require no further action at this time.
3. The Town should establish an AUR for the site in accordance with the guidelines summarized in this letter. For reference, a sample AUR is attached.
4. Department files note that the landfill was closed in accordance with Department requirements at that time.
5. During the site visit conducted by Department personnel, the landfill was noted to be heavily vegetated, and no leachate breakouts or seeps were observed in the immediate vicinity of the landfill.
6. Since the Summary Report did not meet the minimum Department standards for an Environmental Site Assessment Report, the Department is unable to draw conclusions or comment further on site conditions regarding potential environmental impacts based on the report. The Department recommends

additional work be conducted consistent with ASTM standards and Department guidance documents.

7. In the NH DHHS review of the Summary Report, no health-based drinking water standards were exceeded, although a health-based drinking water guideline for Iron was exceeded.
8. The Subject landfill is not subject to the requirements of federal law as they relate to solid waste.
9. The Department recommends that site access be limited.
10. If the Town chooses to investigate the landfill further, the Department is willing to review the Scope of Work for conformance with national standards and guidance documents before additional work ensues. Please be advised that the Department does not bear the expense of any investigative or remedial actions that may be required at the property.

If you have any questions regarding the Subject landfill or the Solid Waste Rules, please contact me at the Solid Waste Management Bureau, Waste Management Division at 271-2925. If you have any questions regarding groundwater or site assessment requirements, please contact Peter Beblowski of the Hazardous Waste Remediation Bureau at 271-3644.

Sincerely,

271-2927

Catherine Wright
Waste Management Specialist III
Solid Waste Management Bureau

CERTIFIED MAIL # 7099 3400 0018 1299 2545

Attachments:

- Registration Form
- NH DHHS Dump Inspection Report dated 12/3/81
- Section 11.0 of the RCMP
- Env-Wm 1403 Groundwater Management and Groundwater Release Detection Permits Contaminated Sites RCMP
- Appendix C of the Guidance Document for the Closure of Solid Waste Landfills in New Hampshire and Typical Groundwater Monitoring Well Detail
- Sample AUR

cc: R. S. Reed, SWMB
J. Rousseau, SWMB (via e-mail, without attachments)
P. Beblowski, HWRB (via e-mail, without attachments)
J. Regan, HWRB (without attachments)
D. S. Gordon, DHHS (without attachments)
SWMB/DB
Ira Leighton, Deputy Regional Administrator, EPA - New England, Region
1 Congress Street, Suite 1001 (CNH), Boston, MA 02114-2023 (without attachments)
Douglas Heath, N. H. Source Water Coordinator, Office of Ecosystem Protection
EPA - New England, Region 1, 1 Congress Street, Suite 1001 (CNH)
Boston, MA 02114-2023 (without attachments)
Chuck Franks, EPA, C.T. Source Water Coordinator, Office of Ecosystem Protection
EPA - New England, Region 1, 1 Congress Street, Suite 1001 (CNH)
Boston, MA 02114-2023 (without attachments)
Dr. Rae Barnhisel
161 Fish Road, Temple, NH 03084 (without attachments)

ATTACHMENT D

NHDES

State of New Hampshire
DEPARTMENT OF ENVIRONMENTAL SERVICES
6 Hazen Drive, P.O. Box 95, Concord, NH 03302-0095
(603) 271-2900 FAX (603) 271-2456

June 24, 2004

Ms. Sherry Fiske
Board of Selectmen
Town of Temple
PO Box 191
Temple, New Hampshire 03084

SUBJECT: **TEMPLE** – Former Temple Municipal Landfill-Old Brown Road, (DES #199103027)

Dear Ms. Fiske:

Following our telephone conversation on June 21, 2004 and review of the Town's recent submittal received on May 18, 2004, the Department of Environmental Services (Department) has the following response.

1. The Activity Use Restriction (AUR) provided is a good first draft. However, in the time between when an AUR was first discussed back in 2001 and its recent submission, the Department has formulated a sample AUR document. Please review the attached sample AUR document and revise the AUR within the context of the sample document. Additionally, the landfill waste mass limits will need to be defined and surveyed for metes and bounds to be included in the AUR.

2. The Environmental Systems Engineering Co. (ESE) Report (Report) dated November 14, 2002 meets the analytical requirements of the supplemental report required in the August 22, 2002 and September 19, 2002 Department letters. However, Item 2c, of the August 22, 2002 letter requires submission of a completed Groundwater Management Permit Application. The ESE Report also suggests that the manganese exceedence is naturally occurring. The Department does not concur with this opinion, as the historic up gradient concentrations are generally an order of magnitude (or more) less than the down gradient wells. Therefore, unless the manganese exceedence can be proven to be a background condition, a complete Groundwater Management Permit Application shall be submitted on or before September 15, 2004. A Groundwater Management Permit Application is attached for your use. Please note that the Department waives the $1,000 application fee for municipalities.

3. Additionally, the ESE Report opined that monitoring wells "B-1 and B-3 are suspect" and recommended that they be replaced and decommissioned. The Department concurs with this opinion, however replacement well locations were not provided. Replacement wells (B-1A and B-3A, respectively) shall be installed immediately adjacent (10' or less)

to the wells to be decommissioned unless new well locations are approved in advance by the Department. In accordance with the attached NHDES well detail. Decommissioning of monitoring wells B-1 and B-3 shall be in accordance with the requirements of Env-Wm 1403.27.

Samples shall be obtained using sampling procedures and protocol described in "Practical Guide for Ground-Water Sampling," USEPA current edition, and "RCRA Ground-Water Monitoring Enforcement Guidance," USEPA current edition. Samples shall be analyzed by a laboratory; certified by the U.S. Environmental Protection Agency or the New Hampshire Department of Environmental Services. Sampling and testing of the new wells shall be initiated a minimum of 2 weeks after installation and followed at a minimum two weeks later by a full second round. Prior to sampling, the wells shall be fully developed until the groundwater withdrawn from each well is essentially free of suspended sediment and relatively non-turbid. Analytical testing of the new wells shall consist of specific conductance @ 25^0C, pH, nitrate, TKN, iron, manganese, chloride & static water elevation, Petroleum & Hazardous Waste Remediation Full List of Volatile Organic Analytes, and Drinking Water Metals. The Department has changed its requirement for volatile organics analyses. The Department no longer references an EPA analytical method to be used but instead specifies a standardized list of analytes along with reporting requirements and detection limits that must be achieved. A copy of the Petroleum & Hazardous Waste Remediation Full List of Analytes is attached for your reference. As referred to herein, the term "Drinking Water Metals" refers to arsenic, barium, cadmium, chromium, lead, mercury, selenium and silver.

All overburden groundwater samples collected for metal analyses shall be analyzed for dissolved metals; and thus must be field filtered (with a 0.45-micron filter) and acidified at the time of collection. Surface water samples and samples collected from bedrock or water supply wells shall be analyzed for total metals, and shall not be filtered.

4. A revised site and groundwater contour plan shall be constructed using the most recent data (following the monitoring well installations) and include all reference groundwater elevations at applicable monitoring locations. Additionally, the test boring/well logs and well construction details are to be submitted in a Supplemental Investigation Report, which shall be provided to the Department with the Groundwater Management Permit Application. All the data required in Section V. Supporting Information of the application shall also be provided in the Supplemental Report.

   It should also be noted that on the March 7, 2003, the Department sent a letter (enclosed) to the consulting community regarding the need for specific technical documents submitted to the Department to be prepared and stamped by professional engineers and/or professional geologists as required by RSA 310-A:18 and RSA 310-A:130. The Groundwater Management Permit Application and Supplemental Report shall be prepared and stamped by a professional engineer or professional geologist.

Should you have any questions regarding this letter, please write to me at the address above or call me directly at (603) 271-2999. Both verbal and written inquiries should refer to the DES number as shown on the subject line above.

Sincerely,

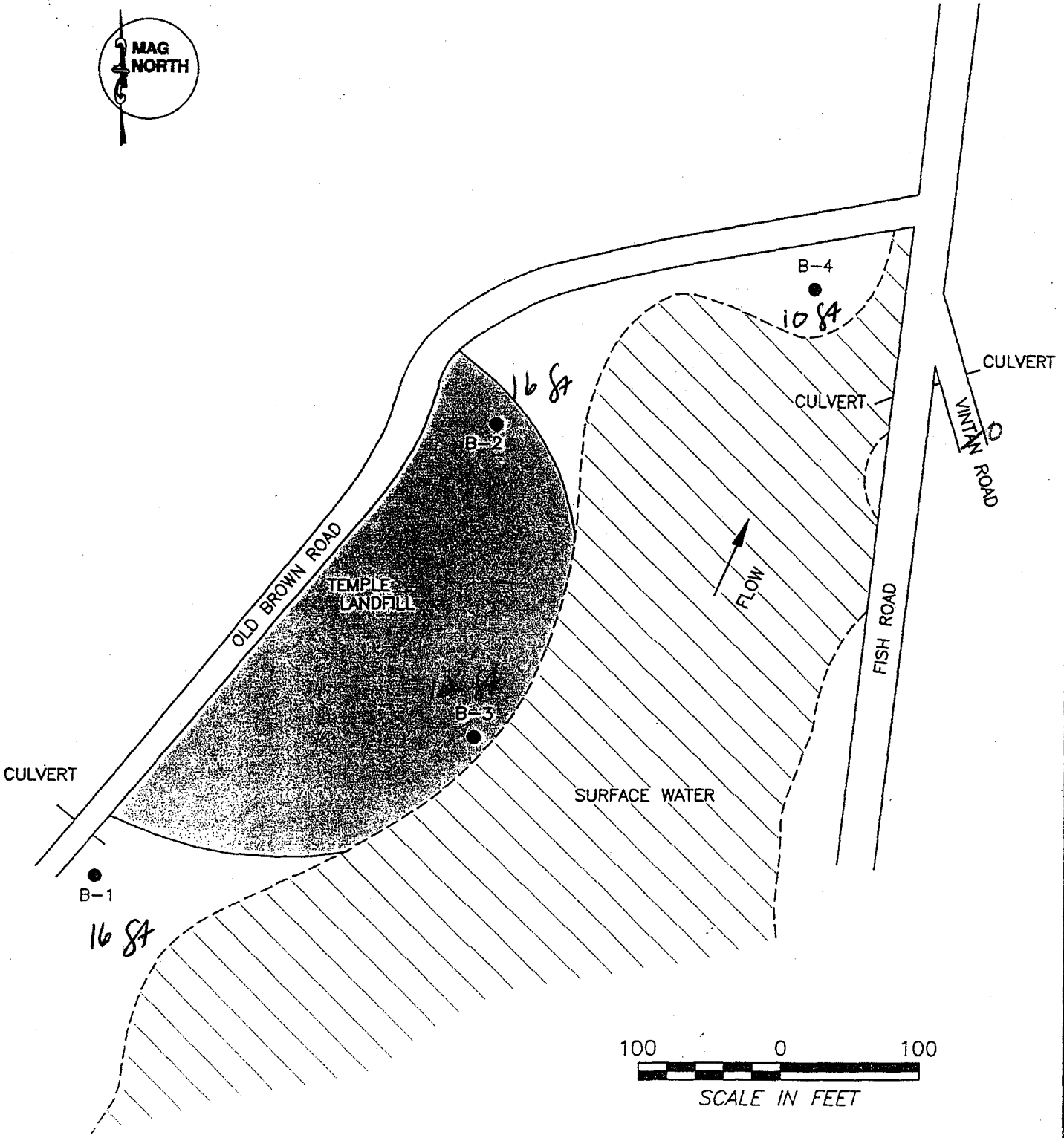
Peter L. Beblowski, C.P.G.
Waste Management Division

PLB/amr
L:\HWRB\Admin\PBeblowski\Te199103027\0604ltr.doc

Attachments: Sample Activity & Use Restriction (AUR) document
Groundwater Management Permit Application
NHDES monitoring well detail
Petroleum & Hazardous Waste Remediation Full List of Analytes
March 7, 2003 Department Letter

cc: Michael Guilfoy, SWMB Administrator
Karlee Kenison, HWRB-GR&P, Supervisor (via email, text only)
Cathy Wright, SWMB (via email, text only)
Brian Hardy, ESE, Co.
D. Rae Barnhisel ✓
HWRB File #199103027

ATTACHMENT E



BORING LOCATIONS ESTABLISHED USING TRADITIONAL SURVEY METHODS (5/2/01)

Jacques Whitford Company, Inc.

JACQUES WHITFORD LOCATION: PORTSMOUTH, NEW HAMPSHIRE				DRAWING TITLE: SITE PLAN TEMPLE LANDFILL TEMPLE, NH
DATE PREPARED: 5-14-01	DESIGNED BY: NS	DRAWN BY: PD	CHECKED BY: NS	REVIEWED BY: CRG
REVISION DATE:	REVISION NO:	DRAWN BY:	CHECKED BY:	REVIEWED BY:
PROJECT NAME/FILE NAME: TEMPLE LANDFILL/FIG2		PROJECT NUMBER/PHASE: MEP01113	SCALE: 1"=100'	PREPARED FOR: STRATEX, LLC.

FIGURE NO. 2

(1)

JACQUES WHITFORD COMPANY, INC
75 Pearl Street
Portland, ME 04101

SOIL BORING LOG

Project:	Temple, NH Landfill/MEP01113				
Client:	Stratex, LLC, Portland, Maine				
Contractor:	Great Works Test	Casing Size:	NA	Boring #.	B-1
Drilling Method:	4.25 inch H.S.Auger	PID:	MicroTIP	Date Begun:	4/23/2001
Ground Elevation:	ND	Checked By:	NOS	Completed:	4/23/2001
Logged By:	TAT	Protection Level:	D	Depth to Water:	5.5 ft.

Depth (ft)	Sample Interval (ft)	Sample No.	Rec/Pen	Standard Penetration Test (blows/foot)				Soil/Rock Description	PID Reading (ppm)
				0 - 6"	6"-12"	12"-18"	18"-24"		
0	0 - 2 ft.	SS-1	1.0 ft/2 ft	16	15	8	8	Light brown, dry, well-graded Gravel/Sand mixture (GW).	0
1									
2									
3									
4									
5	5 - 7 ft.	SS-2	1.0 ft/2 ft	20	25	NA	NA	Light brown, wet, well-graded Gravel/Sand mixture (GW), Groundwater @ 5.5 ft.	1
6								Refusal-Boulder @ 6 ft.	
7								Core through Boulder @ 6 ft. to 10 ft.	
8									
9								Core through Boulder/Gravel @ 10 to 16 ft.	
10								No sample 10 - 12 ft.	
11									
12									
13									
14									
15									
16								End of boring @ 16 ft. bgs.	
17								Set 2 inch well screen 15 - 5 ft. bgs.	
18								Set 2 inch riser 5 ft. bgs to 2 ft. 4 in. ags.	
19								Top of steel casing 2 ft. 6 in. ags.	
20									
21									
22									
23									
24									
25									
26									
27									
28									
29									
30									

NOTES:
NA = Not Applicable
NR = No Recovery
ND = Not Determined
bgs = Below Ground Surface
ft = feet in = inch
Rec/Pen = Recovery/Penetration
ppm = Parts Per Million
ags = Above Ground Surface

JACQUES WHITFORD COMPANY, INC
75 Pearl Street
Portland, ME 04101

SOIL BORING LOG

Project:	Temple, NH Landfill/MEP01113				
Client:	Stratex, LLC, Portland, Maine				
Contractor:	Great Works Test	Casing Size:	NA	Boring #.	B-2
Drilling Method:	4.25 inch H.S.Auger	PID:	MicroTIP	Date Begun:	4/23/2001
Ground Elevation:	ND	Checked By:	NOS	Completed:	4/23/2001
Logged By:	TAT	Protection Level:	D	Depth to Water:	5.0 ft.

Depth (ft)	Sample Interval (ft)	Sample No.	Rec/Pen	Standard Penetration Test (blows/foot)				Soil/Rock Description	PID Reading (ppm)
				0 - 6"	6"-12"	12"-18"	18"-24"		
0	0 - 2 ft.	SS-1	1.0 ft/2 ft	8	3	2	2	Dark brown, dry, silty Sand (SM).	6
1									
2									
3									
4	4 - 6 ft.	SS-2	1.0 ft/2 ft	5	8	10	25	Light brown to orange, wet, well graded Gravel/Sand mixture (GW).	147
5									
6									
7									
8									
9	9 - 11 ft.	SS-3	1.0 ft./2 ft	12	16	50	NA	Light brown, wet, poorly-graded Sand (SP) to light brown, wet, well-graded Gravel/Sand mixture (GW). Refusal @10 ft. Core Boulder/Cobble with Gravel 10 to 16 ft.	512
10									
11									
12									
13									
14									
15									
16								End of boring @ 16 ft. bgs. Set 2 inch well screen 14.5 - 4.5 ft. bgs. Set 2 inch riser 4.5 ft. bgs to 2 ft. 6.75 in. ags. Top of steel casing 2 ft. 8.5 in. ags.	
17									
18									
19									
20									
21									
22									
23									
24									
25									
26									
27									
28									
29									
30									

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JACQUES WHITFORD COMPANY, INC
75 Pearl Street
Portland, ME 04101

SOIL BORING LOG

Project:	Temple, NH Landfill/MEP01113				
Client:	Stratex, LLC, Portland, Maine				
Contractor:	Great Works Test	Casing Size:	NA	Boring #.	B-3
Drilling Method:	4.25 inch H.S.Auger	PID:	MicroTIP	Date Begun:	4/23/2001
Ground Elevation:	ND	Checked By:	NOS	Completed:	4/23/2001
Logged By:	TAT	Protection Level:	D	Depth to Water:	5.0 ft.

Depth (ft)	Sample Interval (ft)	Sample No.	Rec/Pen	Standard Penetration Test (blows/foot)				Soil/Rock Description	PID Reading (ppm)
				0 - 6"	6"-12"	12"-18"	18"-24"		
0	0 - 2 ft.	SS-1	1.5 ft/2 ft	3	4	3	4	Dark brown, dry, silty Sand (SM).	153
1									
2									
3									
4									
5	5 - 7 ft.	SS-2	1.0 ft/2 ft	35	38	50	NA	Dark brown, dry, silty Sand (SM).	473
6								Refusal @ 7 ft.	
7								Move boring 10 ft. south, auger to 10 ft.	
8								New location wet @ 5 ft. bgs.	
9									
10	10 -12 ft.	SS-3	2.0 ft./2 ft	1	1	1	1	Dark brown, wet, peat with wood fragments	1.5
11								and trace silt (PT).	
12								End of boring @ 12 ft. bgs.	
13								Set 2 inch well screen 11 - 1 ft. bgs.	
14								Set 2 inch riser 1ft. bgs to 2 ft. 1.8 in. ags.	
15								Top of steel casing 2 ft. 3.5 in. ags.	
16									
17									
18									
19									
20									
21									
22									
23									
24									
25									
26									
27									
28									
29									
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JACQUES WHITFORD COMPANY, INC
75 Pearl Street
Portland, ME 04101

SOIL BORING LOG

Project:	Temple, NH Landfill/MEP01113				
Client:	Stratex, LLC, Portland, Maine				
Contractor:	Great Works Test	Casing Size:	NA	Boring #.	B-4
Drilling Method:	4.25 inch H.S.Auger	PID:	MicroTIP	Date Begun:	4/23/2001
Ground Elevation:	ND	Checked By:	NOS	Completed:	4/23/2001
Logged By:	TAT	Protection Level:	D	Depth to Water:	0.5 ft.

Depth (ft)	Sample Interval (ft)	Sample No.	Rec/Pen	Standard Penetration Test (blows/foot)				Soil/Rock Description	PID Reading (ppm)
				0 - 6"	6"-12"	12"-18"	18"-24"		
0	0 - 2 ft.	SS-1	1.0 ft/2 ft	4	4	4	6	Light brown, wet, poorly-graded Sand (SP).	34
1									
2									
3									
4									
5	5 - 7 ft.	SS-2	1.0 ft/2 ft	28	50	NA	NA	Light brown, wet, poorly-graded Sand (SP).	6
6								Refusal @ 6 ft. - Boulder/Cobble.	
7								Core to 9 ft.	
8									
9	9 -10 ft.	SS-3	1.0 ft./2 ft	13	50	NA	NA	Light brown silty Sand. Refusal @ 10 ft.	3
10								End of boring @ 10 ft. bgs.-Boulder	
11								Set 2 inch well screen 8.5 bgs - 1.5 ft. ags.	
12								No riser, well screen thread is 1.5 in. tall.	
13								Top of steel casing 2.5 ft. ags.	
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									
24									
25									
26									
27									
28									
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